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ABSTRACT

The purpose of this study was to investigate whether parents were more likely to purchase home computers for sons than for daughters, and whether elementary and secondary students reflect sex differences in their attitudes toward computer use. The survey instrument was constructed to provide face validity in order to investigate whether computer use practices among school age children, as reported in the literature, could be observed among local students. Four groups were surveyed--two fifth grade classes, one seventh grade class, and high school computer programming students--and frequency data were analyzed using chi square and converted to percentages. It was found that: (1) there was no observed statistically significant relationship between sex and ownership of home computers at any of the grade levels; and (2) there were no observed sex differences in computer use attitudes among fifth or seventh graders, although a statistically significant relationship was observed between sex and computer use attitudes among high school students, which is consistent with results reported in the literature. It was also found that parents were as likely to provide home computers for daughters as they were to provide them for sons, a divergence from the findings of prior research. However, because of the small sample size and nonrandom sampling, generalization beyond the present sample is limited and further research is indicated. Fourteen references are listed and two figures are appended. (MES)

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Gender and Microcomputers: Implications for the School Curriculum

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Curriculum

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Abstract

The purpose of this study was to investigate (a) whether parents were more likely to purchase home computers for sons than for daughters, and (b) whether elementary and secondary students reflect sex differences with respect to attitudes toward computer use. The four groups surveyed constitute a sample of convenience, but one also drawn in accordance with theoretical sampling procedures frequently employed in qualitative research (Glaser & Strauss, 1967)—the range of groups evolved during data collection and analysis. The survey instrument was constructed to provide face validity in order to investigate whether computer use practices among school-age children, as reported in the literature, could, in fact, be observed among local students. Frequency data were analyzed using chi square.

Results indicated that there was no observed statistically significant relationship between sex and ownership of home computers at any of the grade-levels. However, although no sex differences were observed in computer-use attitudes among fifth or seventh graders, a statistically-significant relationship was observed between sex and computer-use attitudes among high school students. The latter is consistent with results reported in the literature. Students' anecdotal comments elucidated results.

Divergence from what has been reported in past studies was found with respect to gender and home computer ownership—in this study parents were as likely to provide home computers for daughters as they were to provide them for sons. However, because theoretical sampling was not extended to the level of saturation, and because of small sample size and nonrandom sampling, generalization beyond the present sample is limited. Further research is indicated.

Gender and Microcomputers:

Implications for the School Curriculum

In our society a current underlying assumption is that future higher-paying jobs will be information, computer, and/or high-technology based, and with more and more single-parent, female heads of families being reported, females, in general, have an economic need to be qualified for higher-pay career options. More than a third of the families headed by women live below the poverty level (Sadker, & Sadker, 1985). The average female college graduate earns about the same income as the average male high school dropout—about $12,000 (Sanders, 1984). Traditional female roles are subtly reinforced when girls leave school with limited career options. Yet, results of a federally-funded study revealed 12 barriers to computer access and use by girls (Bekke, et al.,1985).

Stanford University researchers found that parents seem more willing to invest in computer camp classes for sons; one computer camp director reported that mothers bring their boys to classes but that girls have to beg to enroll (Hess & Miura, 1985). Beyers (1984), citing various studies, reported that adults are reluctant to purchase computers for their daughters. Campbell (1984) reported that, "parents are more likely to enroll their sons in private computer camps and to buy them home computers" (p. 4).

Males, more than females, sextype computers and computing as a male domain (Jones, 1983). There have been teacher reports of boys intimidating girls, both physically and verbally, as well as discouraging them from taking computer classes (Parisi, 1984). Since computers are newcomers to education, stereotypes are not as embedded as in other areas, but if current trends are not countered, discrimination in their access and use will become entrenched (Campbell, 1984).

Factors contributing to computer interest and usage are dependent upon the sex of

the student and his/her grade in school (Miura, 1984). "Something" happens at the time of puberty--girls who may have used computers equally with boys in earlier grades show less interest in computers and tend to avoid elective computer classes (Alvarado, 1984). In one study sixth-graders exhibited no sex differences in students' self-confidence regarding computers, perceptions of the utility of computers, or attitudes toward computers, but another indicated that though half the boys used the computer center outside class time, virtually none of the girls did (Lockheed & Frakt, 1984); one middle school study reflected that 78 percent of the students who took advantage of free-time computer use were boys (Sanders, 1985). Further, sex differences with respect to attitudes toward computers are clearly established by the eighth grade level (Collis, 1985). Computer programming courses are often taught in conjunction with mathematics, but studies show that girls would rather learn word processing, database, or graphics applications (Lockheed & Frakt, 1984). Some support exists for the contention that the gender gap that exists in mathematics and science may already extend to computers and that remedial steps may be necessary in order for women to take part in our increasingly-computerized environment (Dambrot, Watkinsmalek, Silling, Marshall, & Garver, 1985).

Methods

Sample. The sample came from among a population of elementary and secondary students in existing classes, arbitrarily inclusive of fifth graders through high school level, in Shelby County, Tennessee. The four groups surveyed comprise a sample of convenience in that they were preexisting classes at schools to which researcher access could be negotiated, while at the same time attempting to include a range of educational settings as groups were selected according to theoretical sampling procedures (Glaser & Strauss, 1967): a private school fifth grade, a county public school fifth grade, a suburban public school seventh grade, and city public high school computer programming students.

Variables. The independent variable was sex in both instances; the dependent variables were (a) ownership of a computer at home and (b) computer-use attitude relative to sex of user.

Instrument. A short survey questionnaire was designed to provide face validity reflecting results of research reported in the literature in that respondent students were asked, among other questions, whether they had computers at home and whether they felt that boys or girls use computers more--the two questions of interest in the present analysis.

Data Analysis. The data were summarized descriptively, and, using chi square, the independent variable, sex, was analyzed relative to (a) computer ownership and (b) computer-use attitudes. Anecdotal information was compiled from other student responses.

Results

Frequencies were calculated and converted to percentages for each of the four school classes comprising the sample. The results are included in Figure 1.

Insert Figure 1 about here

Figure 1 reflects that proportions of boys and girls within each school class surveyed are roughly comparable with respect to computer ownership. Chi square analysis confirmed that there is no statistically significant relationship between sex and ownership of home computers within any of the four groups. Figure 2 further elucidates the same information, but in this case proportions of students who own computers, across the four groups is shown: the relatively higher socioeconomic status of students in the private fifth grade and the suburban seventh grade classes is reflected in the higher percentages of students who do own computers, as compared to the county fifth graders and the city high school students.

Insert Figure 2 about here

No statistically significant relationship was found between sex and computer-use attitudes among fifth or seventh graders. However, consistent with the literature, high school students did exhibit a statistically significant relationship between sex and computer use attitudes ($\chi^2 = 7.24$; $p < .05$). Reasons given by high school students about computer use include that boys are more interested in computers, boys work with male friends, and "Boys are the businessmen." However, though no statistically significant relationship was found among younger students, sextyped attitudes were reflected in comments such as, "We beat up girls," girls like other things," "a man invented a computer," and, on the other hand, "there are so many lady 'reseptionest'."

Conclusions

If females are to leave school with realistic views of themselves and realistic perspectives concerning their futures, adequate career preparation is critical. If it is true that today's students need computer instruction in order to be prepared for tomorrow's world, barriers to girls' computer access and use need to be addressed in school curricula. Even though ownership of home computers was not found to be related to sex, it can be inferred from relative proportions of students who own computers that, as would be expected, students in schools which reflect higher socioeconomic levels do have an at-home computer advantage. This is further justification for ensuring that students have equal access in school settings. Since educators are in a position to affect how computers are implemented in school curricula, and school counselors are in a position to influence students' thinking about careers, there is an implicit responsibility to address the issues inherent in students' economic futures, including the fact that low pay associated with

women's traditional career choices has its roots in decisions made during the school years.

The present study should be extended to the level of theoretical sampling saturation, including larger sample sizes, so that generalization may be less limited. School computer curricula should also be examined with consideration of such questions as whether girls' reported interest in computer word processing and data base applications (high-tech typing and filing) is likely to result in their continuing to be socialized into low-pay, sex-typed clerical occupations.

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Figure 1

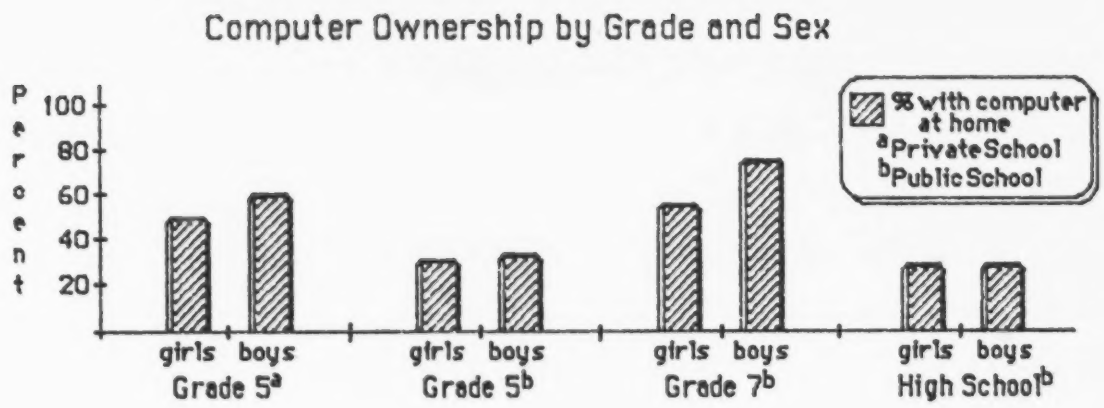
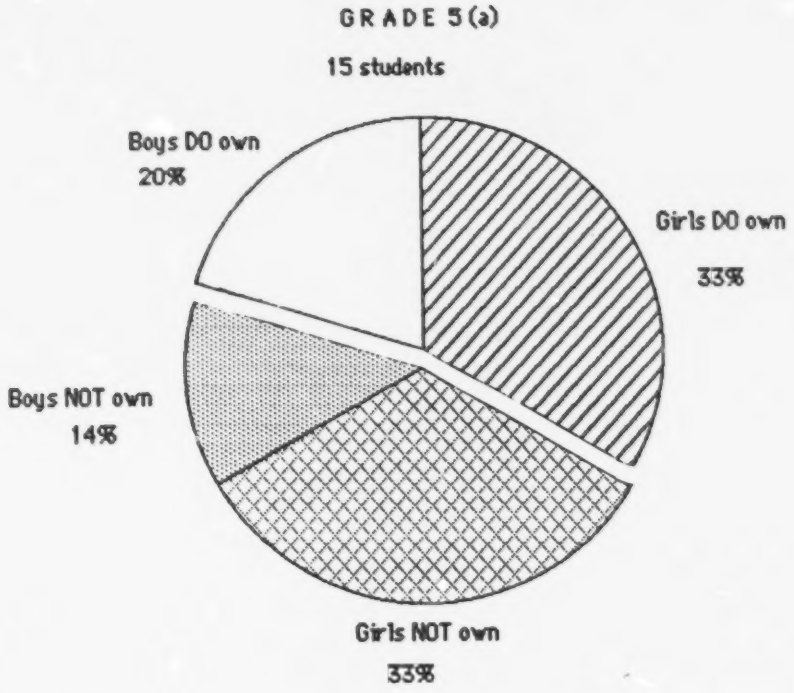
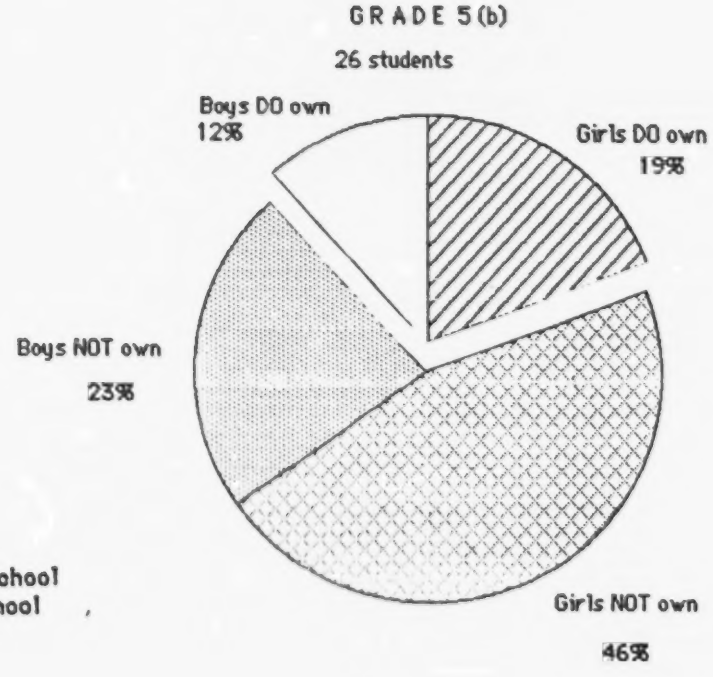

Computer Ownership by Grade and Sex
Percent
100
80
60
40
20
% with computer at home
[a]Private School
[b]Public School
girls
boys
Grade 5[a]
girls
boys
Grade 5[b]
girls
boys
Grade 7[b]
girls
boys
High School[b]

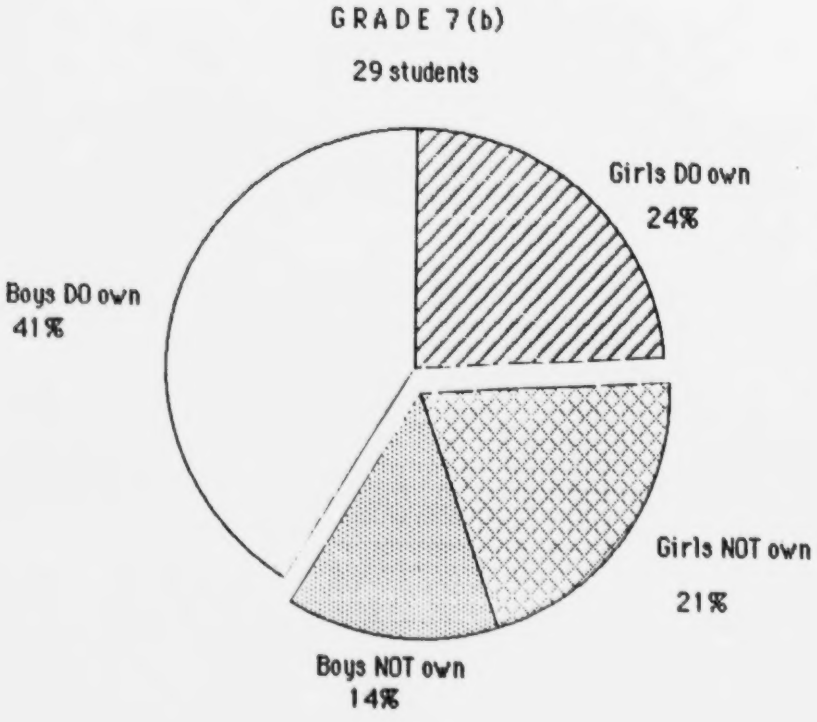
Figure 2. Proportions of students who DO and do NOT own computers, by sex, across classes

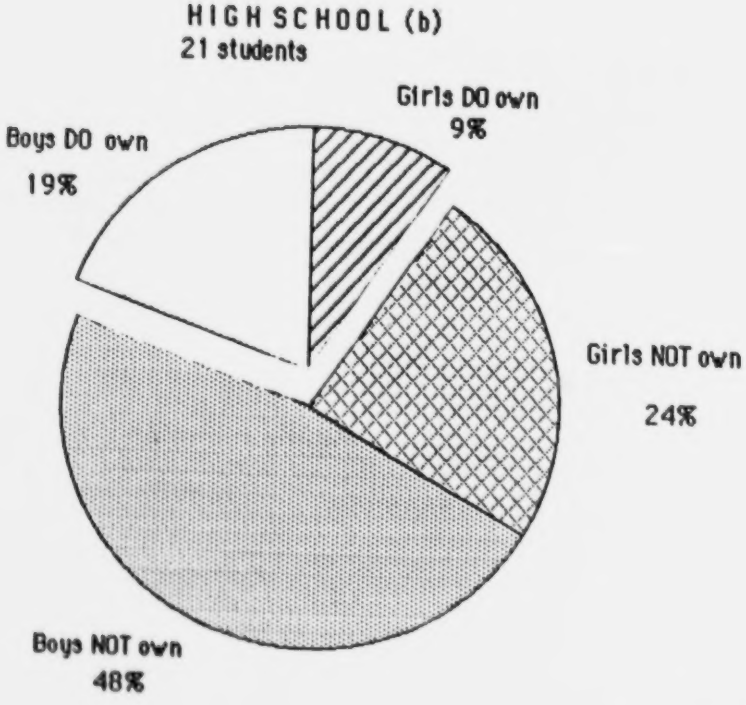




[a]Private School
[b]Public School

Figure 2 (concluded)





[a]Private School
[b]Public School